REMARKS

Claims 1, 3-12, 15-18, and 20-23 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Ding. The rejection is traversed.

The Office Action asserts that Ding discloses that the "flow rate of said ammonia is at least about 2 sccm (col. 11-12)." (Pg. 3). However, claim 1 recites that the "flow rate of said ammonia is in the range from about 2 sccm to about 6 sccm." (emphasis added). Claim 1 does not recite an open-ended flow rate of the ammonia which "is at least about 2 sccm" as asserted by the Office Action.

Accordingly, Ding does not teach Applicant's claimed flow rate for ammonia (NH_3). Ding's Example 1 discloses a "process gas comprising 40 sccm CHF_3, 11 sccm NH_3, 11 sccm CF_4, and 80 sccm Ar." (Col. 11, lines 18-19). Ding's Example 2 discloses a "process gas comprised [of] 55 sccm CHF_3, 11 sccm NH_3, 11 sccm CF_4, and 80 sccm Ar." (Col. 11, lines 42-43). Ding's Example 3 discloses a "process gas comprising 33 sccm CHF_3, 11 sccm NH_3, 5 sccm CF_4, and 66 sccm Ar." (Col. 12, lines 3-4). Ding's Example 4 discloses the "process gas comprised [of] 40 sccm CHF_3, 11 sccm NH_3, 40 sccm CO, 11 sccm CF_4, and 80 sccm Ar." (Col. 12, lines 25-26).

In Examples 1-4, Ding merely discloses a flow rate of 11 sccm for ammonia which falls outside Applicant's claimed flow rate of from about 2 sccm to about 6 sccm. Ding's flow rate is at least twice as fast as Applicant's claimed flow rate. As such, claim 1 is not anticipated by Ding and is allowable. Claims 3-12, 15-18 and 20-23 depend from claim 1 and are similarly allowable.

Claim 1-13, 15-25, 36-39, 41-46 and 64-70 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tan in view of Ding. The rejection is traversed.

For similar reasons provided above regarding claim 1, Ding does not teach or suggest that the "flow rate of said ammonia is in the range from about 2 sccm to about 6 sccm." Ding discloses a flow rate of 11 sccm. In fact, the Office Action acknowledges that

"Tan does not teach: 1) using the plasma etchant mixture . . . with the flow rate of said ammonia of at least about 2 sccm . . . with further forming a protective layer over the opposed side wall spacers of the adjacent gate stacks." (Office Action, pg. 5) (emphasis added).

Tan and Ding are also not properly combinable. Ding discloses a plasma etchant mixture which results in "polymeric passivating deposits 46 [which] are typically formed on the sidewalls 48 of the etched features 45." (Col. 4, lines 24-25) (emphasis added). In contrast, Tan discloses an etchant mixture that will stop on the sidewalls of the spacer. If Ding's etchant mixture is used in Tan, then the etchant mixture would not stop on the sidewalls of the spacer, but would stop on the polymeric coating layer that Ding's plasma etchant mixture would generate. The resulting structure in Tan would not be self-aligned. Thus, combining Ding with Tan defeats the very purpose that Tan is directed to: an etchant mixture that stops on the sidewalls of the spacers.

The Office Action asserts that Tan would benefit from a better etch rate and improved etch selectivity without an etch stop. However, it is not beneficial to increase the etching rate in Tan. Tan is directed to employing two different etch rates. A faster etch rate in Tan is not desired since the slower etching rate of the nitride layer results in the plasma etch stopping at the sidewall spacers.

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art' at the time the claimed invention was made because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references." M.P.E.P. § 2143.02. There is no objective reasoning to combine Tan and Ding where Tan benefits from two different etch rates. It is impermissible hindsight reconstruction to combine Tan and Ding.

Moreover, even if the references are properly combinable, which they are not, the cited references would not teach or suggest the subject matter of claims 1, 36 or 64. The cited references do not teach or suggest "an etching composition consisting essentially of ammonia . . . and the flow rate of said ammonia is in the range from about 2 sccm to about 6 sccm," as recited in claim 1, or "the step of etching an opening in said insulative layer forms a protective layer on said sidewall spacers that is from about 5 to about 50 Å thick," as recited in claim 36 (emphasis added), or a "plasma etchant mixture . . . [which] forms a protective layer over opposed sidewall spacers . . . that is from about 5 to about 50 Å thick," as recited in claim 64 (emphasis added).

"In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists." M.P.E.P. § 2144.05. Similarly, a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. M.P.E.P. § 2144.05. However, neither Tan nor Ding teach or suggest forming a protective layer over the sidewalls that is from about 5 to about 50 Å thick. Neither reference even teaches or suggests a thickness for a protective layer. Similarly, neither Tan nor Ding teach or suggest Applicant's claimed flow rate for ammonia that is from about 2 sccm to about 6 sccm. Ding merely discloses a flow rate of 11 sccm. Accordingly, the Office Action has not set forth a *prima facie* case of obviousness.

Claims 2-13 and 15-25 depend from a claim 1. Claims 37-39 and 41-46 depend from claim 36. Claims 65-70 depend from claim 64. Claims 2-13, 15-25, 37-39, 41-46, and 65-70 are allowable along with their base claims for at least the reasons provided above.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

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